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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/750,144	12/31/2003	Allan Robert Knoll	1014-SP230	7932

34456 7590 01/10/2006

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EXAMINER	
NORRIS, JEREMY C	

ART UNIT	PAPER NUMBER
2841	

DATE MAILED: 01/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/750,144	KNOLL ET AL.	
	Examiner	Art Unit	
	Jeremy C. Norris	2841	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 September 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 September 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 3-11, 15-18, 20, 23, and 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,576,843 B1 (Ashworth) in view of US 5,358,929 (Fujikami).

Ashworth discloses, referring to figure 3, a superconducting article, comprising; a substrate (65) a plurality of superconductor strips (60, 61, 62) overlying the substrate and extending along a longitudinal direction, the superconductor strips comprising first and second superconductor strips extending parallel to each other and being spaced apart from each other by a gap extending perpendicular to the longitudinal direction. Ashworth does not specifically disclose and at least one conductive bridge (6) electrically coupling at least the first and second conductive strips with each other. However, it is well known in the art to connect parallel superconductive strips with a conductive bridge as evidenced by Fujikami (see figure 13). Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to connect the strips in the invention of Ashworth with a conductive bridge as is known in the art and evidenced by Fujikami. The motivation for doing so would have been to enable permanent current junction of superconductive wires (Fujikami col. 1, lines 55-65). Moreover, although the modified invention of Ashworth does not specifically state that the substrate has a dimension ratio of not less than about 10 [claim 1], Ashworth does teach that the substrate is to be sized commiserate with the array of superconductive strips to be supported (see col. 4, lines 35-40). Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to form the substrate has a dimension ratio of not less than about 10 (or alternately 100 [claim 26] or 1000 [claim

27]). The motivation for doing so would have been to properly support the superconductor strips.

Similarly, though the modified invention of Ashworth does not specifically teach that the superconductor strips are spaced apart from each other by an average gap width of at least 1 μm [claim 3], wherein said average gap width is not less than about 5 μm (see col. 11, lines 40-50) [claim 4], or wherein the superconductor strips are spaced apart from each other by a substantially constant gap [claim 5], Ashworth teaches that the gaps are determined to minimize the ac losses (col. 5, lines 1-15). Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to form the gaps to have a constant width of 5 μm or more. The motivation for doing so would have been to minimize the ac losses. Furthermore, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering that optimum or workable ranges involves only routing skill in the art. *In re Aller,* 105 USPQ 233.

Additionally, the modified invention of Ashworth teaches wherein the first and the second superconductor strips have an average width of at least 5 μm (Fujikami col. 5, lines 1-15) [claim 6], wherein the first and second superconductor strips have substantially the same width [claim 7], wherein the conductive strips are generally co-planar with each other, forming a superconductor layer [claim 8], wherein the article comprises a minimum of one bridge per 100mm of substrate (see Okada col. 11, lines 15-25) [claims 15, 16, 17, 18], further comprising at least one conductive shunt layer (40, Fujikami figure 13) overlying the superconductor layer [claim 20], wherein the superconductor strips are comprised of a high temperature superconductor (see col. 4,

lines 50-60) [claim 23], wherein the article is in the form of a superconducting tape (see col. 4, lines 30-40) [claim 28].

Regarding claims 9-11, these claims cite process limitations in a device claim and thus are only considered to the extent to which the process impacts the structure of the device. Moreover, it is well settled that even though product by process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product by process claim is the same as or obvious from a product of the prior art, the claims unpatentable even though the prior product was mad by a different process. *In re Thorpe*, 77 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir 1985).

Claims 12-14, 19, 24, 25, and 29-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ashworth in view of Fujikami as applied to claim 1 above, and further in view of US 6,133,814 (Okada).

The modified invention of Ashworth discloses the claimed invention including that the bridge comprises superconducting material (Fujikami col. 11, lines 55-60) except for that the at least one conductive bridge comprises a plurality of conductive bridges [claim 12]. However, it is well known in the art to join superconductors with multiple conductive bridge portions as evidenced by Okada (see figure 2). Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to further modify the invention of Ashworth with multiple conductive bridge sections. The

motivation for doing so would have been to manufacture a long wire maintaining the characteristics of a short wire (Fujikami col. 9, lines 60-68).

Additionally, the twice modified invention of Ashworth teaches wherein the superconductive strips and plurality of conductive bridges substantially coplanar, formed from a patterned layer of superconductive material [claim 13], wherein the conductive bridges are spaced apart generally periodically along a length of the substrate (see Okada figure 9) [claims 14, 19].

Also, while the modified invention of Ashworth does not specifically teach that the high temperature superconductor comprises $REBa_2Cu_3O_{7-x}$, wherein RE is a rare earth element [claim 24], wherein the superconductor material comprises $YBa_2Cu_3O_7$ [claim 25], Ashworth does teach that the superconductor could be an known superconducting material (col. 2, line 65 – col. 3, line 5). Since $YBa_2Cu_3O_7$ is a known superconductive material, as evidenced by Okada (see col. 6, lines 50-55), it would have been obvious to one having ordinary skill in the art at the time of invention to use $YBa_2Cu_3O_7$ as the superconducting material in the invention of Ashworth. The motivation for doing so would have been to use a known material. Moreover, it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin,* 125 USPQ 416.

Furthermore, the modified invention of Ashworth teaches wherein the substrate, the superconductive strips, and the conductive bridges form a superconductive tape, the article comprising a coil having a plurality of superconductive tapes (see Okada col. 4, lines 45-55) [claim 29], wherein the article is a power transformer, the power

transformer comprising at least a primary winding and a secondary winding, wherein at least one of the primary winding and secondary winding comprises a wound coil of superconductive tape, the superconductive tape comprising said substrate, said superconductor strips, and said conductive bridges (see Okada col. 5, lines 25-35) [claim 30], wherein the article is a rotating machine, the rotating machine comprising at least one winding, wherein the at least one winding comprises a superconductive tape formed of said substrate, said superconductor strips, and said conductive bridges (see Okada col. 5, lines 25-35) [claim 31], wherein the rotating machine is a power generator or motor (see Okada col. 5, lines 25-35) [claim 32].

Claims 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ashworth in view of Fujikami as applied to claim 1 above, and further in view of US US 6,436,317 (Malozemoff).

The modified invention of Ashworth teaches the claimed invention as described above except the modified invention of Ashworth does not specifically disclose a biaxially textured layer, over which the superconductor layer is provided [claim 21]. However, Malozemoff teaches forming a bi-axially textured layer on a substrate to which a superconductor is applied. Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to use the bi-axially textured layer taught by Malozemoff in the modified invention of Ashworth. The motivation for doing so would have been to strengthen the device over the length of the device to avoid weak links in the superconducting path, that could lead to reduced critical currents and weaker

superconducting performance in magnetic fields (see Malozemoff col. 8, lines 50-55). Regarding claim 22, the limitation "wherein the biaxially textured layer comprises an IBAD layer" is a process limitation a device claim and thus is only considered to the extent that said process impacts the structure of the device. Moreover, it is well settled that even though product by process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product by process claim is the same as or obvious from a product of the prior art, the claims unpatentable even though the prior product was mad by a different process. *In re Thorpe*, 77 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir 1985).

Response to Arguments

Applicant's arguments with respect to claims 1 and 3-32 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremy C. Norris whose telephone number is 571-272-1932. The examiner can normally be reached on Monday - Friday, 9:30 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on 571-272-1957. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JCSN

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